Our County

Transportation Briefing

July 2018

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Introduction

The L.A. County Chief Sustainability Office, in partnership with BuroHappold Engineering, UCLA, and Liberty Hill Foundation, is hosting a series of workshops to inform Our County, the countywide sustainability plan. Our County is an effort to outline a bold, inclusive vision for the future that balances the co-equal values of environment, equity, and economy.

At these workshops, we will be discussing transportation issues and opportunities for the region, and will take a deep dive into where and how transportation intersects with equity, public health, labor, housing, and other issues. This document is provided as background information to inform those workshops and presents draft goals and strategies as a starting point for discussion.

The quality of our transportation system determines how easily we can move around the County, and has huge impacts on the local and global environment. Further, lack of convenient mobility options negatively affects economic opportunity for residents and creates challenges related to safety, congestion, and affordability. Getting transport right will improve the lives of all County residents.

Governance Context

The transportation system in Los Angeles is governed by a complex set of agencies. The Southern California Association of Governments (SCAG) coordinates planning and programming amongst the six counties of Southern California, while the Los Angeles County Metropolitan Transportation Authority (Metro) leads transit and highway operations, maintenance, planning, and construction. Sub-regional actions are organized by the Councils of Governments while individual municipalities maintain authority over their streets and in some cases operate their own buses. The state holds the unique power of regulating automobile emissions standards. This simplified overview of governance in Los Angeles begins to illustrate the landscape of decision makers needed to deliver a transportation system that is sustainable, efficient, reliable, and just.

The County of Los Angeles has relatively little direct control over the region's transportation system. The Department of Public Works manages roadways in unincorporated areas and operates the Unincorporated County of Los Angeles Transit Services. This includes dial-a-ride (paratransit) services for eligible residents. The County also contracts with Metro to sell monthly passes at reduced rates for eligible unincorporated area residents. The County of Los Angeles has limited influence over the region's ports.

While the County is not a major transit provider, the five County Supervisors make up a portion of Metro's 13-member Board of Directors. Given the limits of its direct control, the County primarily seeks to influence and support regional initiatives in order to achieve its sustainability goals.

Definition of Key Terms

Term	Definition	Example
Organizing Principle	A core value at the heart of the plan - the "why"	Nurturing Healthy Communities
Goals	Broad, aspirational statement of what we want to achieve	Improve transportation-related health and safety outcomes
Strategies	Approach or approaches that we take to achieve a goal	Employ strategies to mitigate the negative health effects of transportation on adjacent neighborhoods
Actions	Specific policy, program, or tool we take to achieve a strategy	Accelerate the electrification of freight vehicles
Indicators	Quantitative and qualitative measures used to assess performance	Air quality (PM 2.5, ground level ozone)
Targets	Levels of performance that are sustainable	50% reduction from baseline year

How We Move About the Region

Overview

A vast share of L.A. County residents make most of their trips by private vehicle, contributing to the region's reputation for heavy traffic and long commutes. While the Los Angeles region was once home to the nation's most extensive rail system, it largely developed in the age of the automobile, resulting in an urban form and infrastructure that prioritizes cars and trucks over other modes of transportation. While there have been recent infrastructure improvements for sustainable and active modes of transportation - such as walking, cycling, and public transit – long-term trends indicate that vehicles persistently remain the dominant mode of transportation.

Data from the 2015 American Community Survey indicate that 78% of L.A. County commuters drove alone, 10% carpooled, 6% took public transportation, and 6% walked, or took a bike, motorcycle, or taxi to work.[1] In 2015, 3.5% more people reported driving alone and 2.4% fewer people reported carpooling compared to 2005. Public transit use increased from 2005 to 2011, but decreased from 2011 to 2015. Note that while commutes to and from work account for only about 20% of all trips, they are the most rigorously and consistently surveyed trips and provide insight into overall transportation preferences.

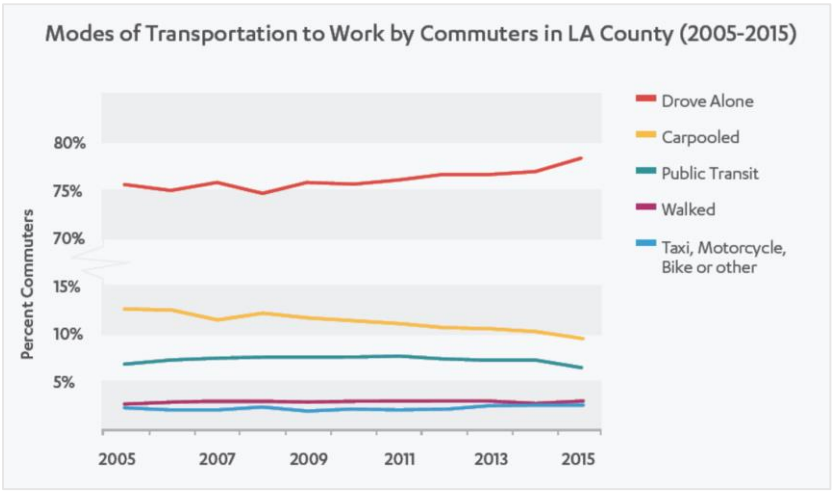

Figure 1. Surveyed Estimate of Commuter Transportation Modes in L.A. County[2]

[1] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

[2] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

Transportation choices are linked to many aspects of life in the Los Angeles region, including the accessibility of highways and public transportation, perceptions of quality and safety, proximity of housing to jobs, household finances and physical abilities. The table below provides insight into transportation mode trends based on commute travel times.

Los Angeles County Travel Times and Modes of Transportation to Work (2015) Source: ACS						
	Total	Drove Alone	Carpooled	Public Transportation (excl. taxicab)	Walked	Taxicab, motorcycle, bicycle, or other means:
Workers 16 years and over	4,454,851	3,489,716	426,493	287,562	133,636	117,444
0-19 minutes	31%	31%	28%	9%	77%	44%
20-59 minutes	55%	57%	57%	52%	22%	43%
60 or more minutes	13%	12%	15%	39%	1%	13%
Mean travel time to work (min)	30.9	29.8	32.6	50.3	--	--

Figure 2. L.A. County Commuter Travel Times by Mode of Transportation in 2015[3]

The mean commute time in 2015 was 31 minutes, which was about a 3% increase from the 2013 mean commute of 30.0 minutes. Average commute time by public transportation greatly exceeds the commute time for other modes, a figure that is in line with other major urbanized areas. Longer commutes can mean more time away from family at home, and have been linked to negative health impacts including depression, high stress levels, loss of sleep, and obesity.[4]

The region also moves a tremendous amount of goods between factories, warehouses, ports and railyards. Many of the trucks, ships, and locomotives that are used for goods movement are powered by diesel engines which generate pollutants that affect adjacent communities, which are predominantly low-income communities of color.

[3] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

[4] Source: http://www.businessinsider.com/long-commutes-have-an-impact-on-health-and-productivity-2017-5

Automobile Transportation

The dominant form of transportation in the region are automobiles, which utilize an extensive road network. The County's highway system accommodates 66 million passenger and freight trips per day on more than 70,000 lane-miles of infrastructure – the equivalent of 2.8 times the circumference of the Earth.[5] We have also dedicated a large amount of infrastructure to store automobiles; a 2015 study estimated 25% of the County's incorporated land is devoted to roadways and parking with 14% committed to parking alone.[6] These surfaces are made of impermeable and heat-trapping materials that contribute to urban heat island, exacerbate air quality issues, and contribute to stormwater runoff and water pollution while precluding other potential land uses such as housing and open space.

Figure 3. L.A. County Highway Network[7]

[5] SCAG RTP 2016 PG 31.

[6] Mikhail Chester, Andrew Fraser, Juan Matute, Carolyn Flower & Ram Pendyala (2015) Parking Infrastructure: A Constraint on or Opportunity for Urban Redevelopment? A Study of Los Angeles County Parking Supply and Growth, Journal of the American Planning Association, 81:4, 268-286, DOI: 10.1080/01944363.2015.1092879

[7] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

Recent data show a slight decline in County residents' vehicle usage on a per capita basis. As shown in the figure below, vehicle miles traveled (VMT) per capita decreased by more than 3% from 2005 to 2014 to 21.5 daily vehicle miles per capita. However, due to population and job growth as well as increases in vehicle ownership, total VMT remained relatively steady over the same period.[8]

Between 2000 and 2015, vehicle ownership increased from 1.7 to 2.4 vehicles per household in Southern California, driven largely by increasing ownership rates amongst low-income and foreign-born households who previously did not have access to cars.[9] During these years, the population also increased by approximately 2.3 million people, an increase of nearly 14%.

There is also growing goods movement throughout the County. Regional truck vehicle miles traveled (VMT) are estimated to increase by over 80% by 2035, relative to a 2008 baseline, growing from 6.8% of total VMT in 2008 to 10% by 2035.[10] This is driven by growth in container shipping and threatens to worsen congestion on the region's highways and railways, as well as worsening the freight system's impacts on health and quality of life unless there is significant improvement in pollution control strategies.

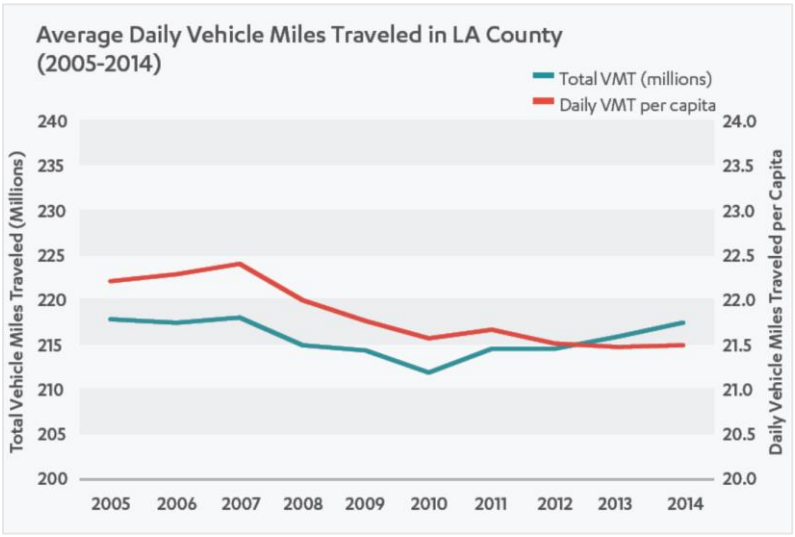

Figure 4. Average Daily VMT in L.A. County[11]

[8] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

[9] Manville, Michael, Brian D. Taylor, Evelyn Blumenberg, Falling Transit Ridership: California and Southern California. January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf

[10] On the Move: Southern California Delivers the Goods. http://www.rctcdev.info/uploads/media_items/freight-brochure-2015-0121-r7.original.pdf

[11] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

While the total VMT has stabilized, a number of public agencies have set goals to reduce this number in the future. SCAG has set a goal of 20.5 miles average daily VMT per capita by 2040 for Los Angeles and the five other counties in the SCAG region; this represents a 4.7% decrease below 2014 levels for the SCAG region. Los Angeles County has already reduced VMT to 21.5 daily per capita vehicle miles traveled, but there is no VMT goal specific to Los Angeles County. VMT can be affected by public policies that decrease automobile use by investing in sustainable transportation infrastructure, passing along the true costs of road maintenance to road users, and supporting land use decisions that encourage walking, cycling, and public transit ridership.

Public Transit

Metro provides rail and bus transit to much of the region; the five members of the Board of Supervisors also sit on Metro's 13-member Board of Directors. Additional bus service is provided by 26 municipal transit authorities including the City of Santa Monica's Big Blue Bus, LADOT's DASH and Commuter Express services, Culver City Bus, Foothill Transit, Long Beach Transit, Torrance Transit, Antelope Valley Transit, Unincorporated County of Los Angeles Transit Services, and many others. Metrolink and Amtrak provide regional and intercity passenger rail service.

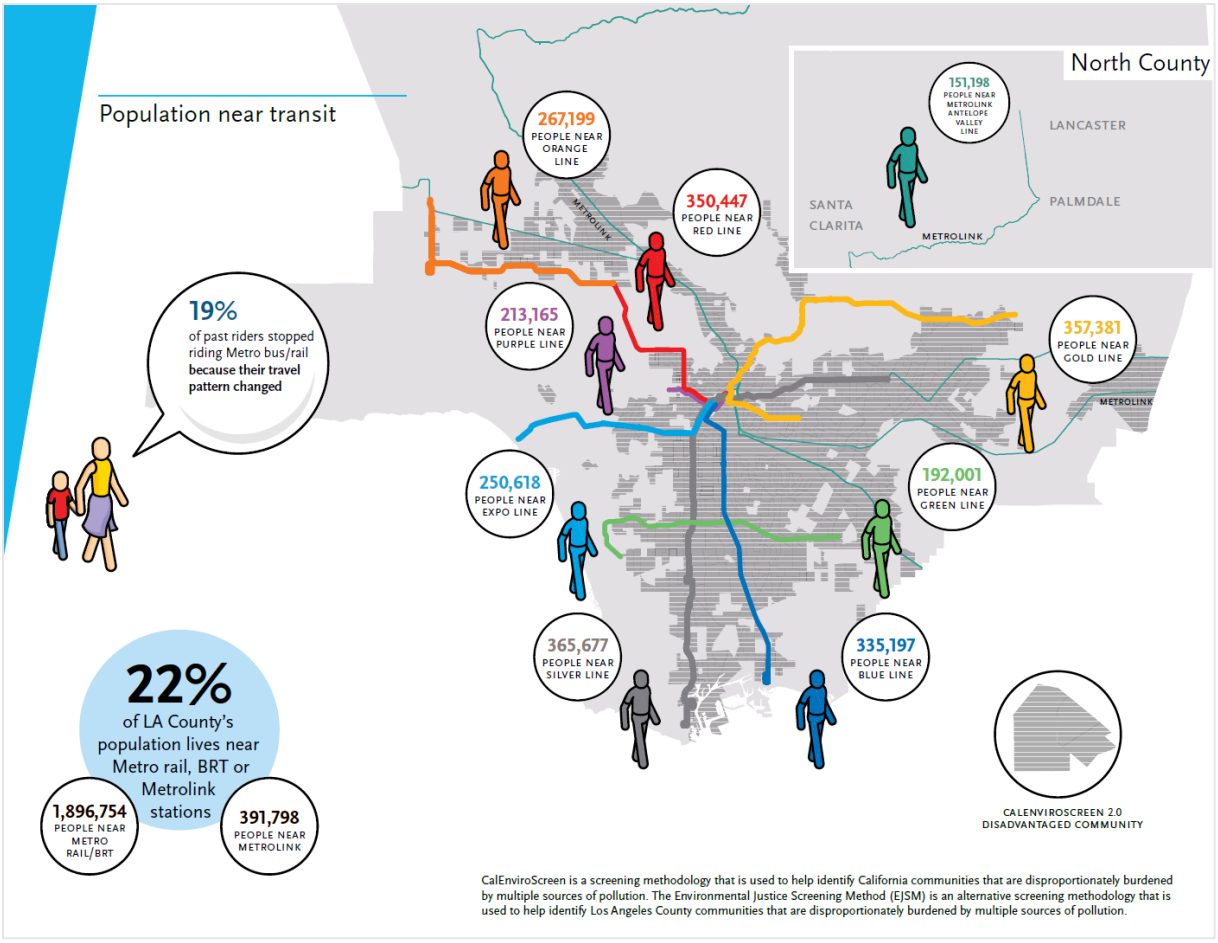

Figure 5. Population within ½ Mile of Metro Rail, BRT, and Metrolink Service[12]

There has been an overall decline in transit ridership in recent years. Passenger trips decreased by 3.4% since reaching a peak of 642.8 million passenger trips in 2007. [13] Much of this decline can be explained by the increasing levels of private vehicle ownership discussed above.

[12] Metro 2008-2015 Quality of Life Report. https://media.metro.net/docs/report_qualityoflife.pdf
[13] Unlinked passenger trips, defined by each passenger boarding and counting connections separately

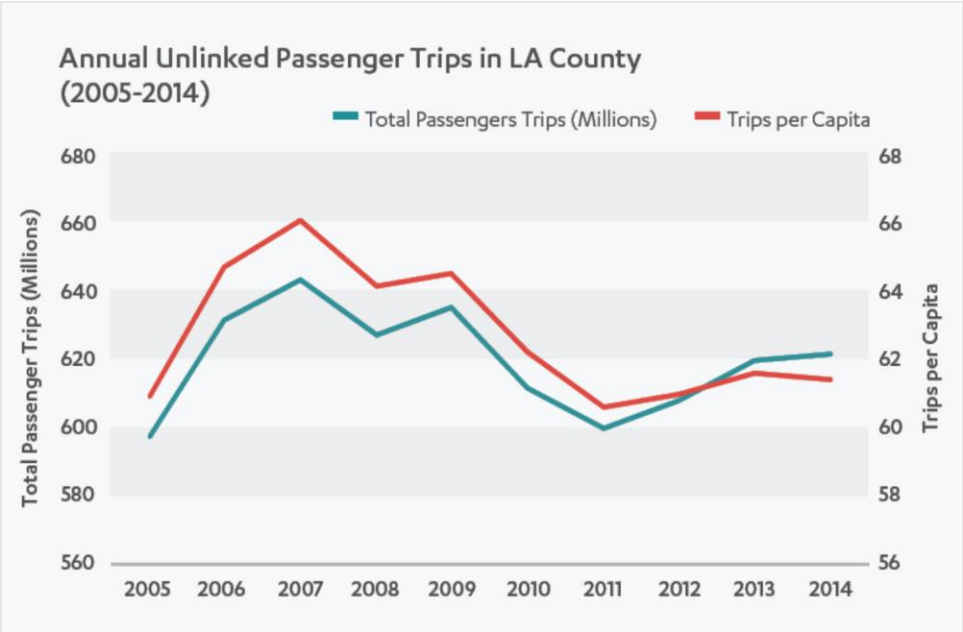

Figure 6. Annual Unlinked Passenger Trips in L.A. County[14]

Rail

Established rail lines, including the Red, Purple, Green, Orange and Blue Lines, are currently experiencing multi-year ridership declines, whereas the Gold and Expo Lines, which have both recently extended service routes, are seeing an increase in ridership. Metro added six Gold Line stations in the San Gabriel Valley in March 2016 and extended Expo Line service with seven new stations in May 2016. Additionally, Metro will be expanding rail service in the near future, with service expansions, connections, and new routes including:

- extended service on the Purple Line from Koreatown to Westwood, a neighborhood with a high level of existing transit usage on buses, via Fairfax and Century City;
- new access to LAX Airport via the Airport Metro Connector;
- an extension of the Gold Line east to Claremont and Montclair;
- a northern spur of the Crenshaw Line connecting to Expo, Purple, and Red Lines;

[14] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

- an extension of the existing Green Line from its southern terminus to Torrance and north to connect to the 96th Street Station, providing a connection to the Crenshaw Line and the Airport Metro Connector;
- new light rail service to the Gateway Cities on the West Santa Ana Branch Transit Corridor;
- new light rail service connecting the Orange Line to the Sylmar/San Fernando Metrolink station via Van Nuys Boulevard; and
- service over the Sepulveda Pass, connecting the San Fernando Valley to the Westside.

Bus

L.A. County has an extensive bus transit network; Metro alone has 1,950 buses operating on weekdays, serving 169 Metro operated routes and over 15,000 bus stops. Metro has operated a 100% clean-fuel bus fleet since 2011, reducing its greenhouse gas emissions by 80% compared to a diesel fleet.[15] Additional bus services are provided by multiple municipal transit agencies. The integration of multiple service providers presents interoperability challenges, including difficulties coordinating transfer points between systems and variation in their fare structures, payment methods and transferability. Metro has begun to address this issue by allowing interagency transfers; if a rider has a TAP card containing Stored Value, the rider is able to board a second transit agency within 2 ½ hours from the first boarding.[16] Almost all transit agencies within the County are part of the TAP card network, although it does not extend to neighboring counties.

[15] Metro 2008-2015 Quality of Life Report. https://media.metro.net/docs/report_qualityoflife.pdf
[16] www.taptogo.net

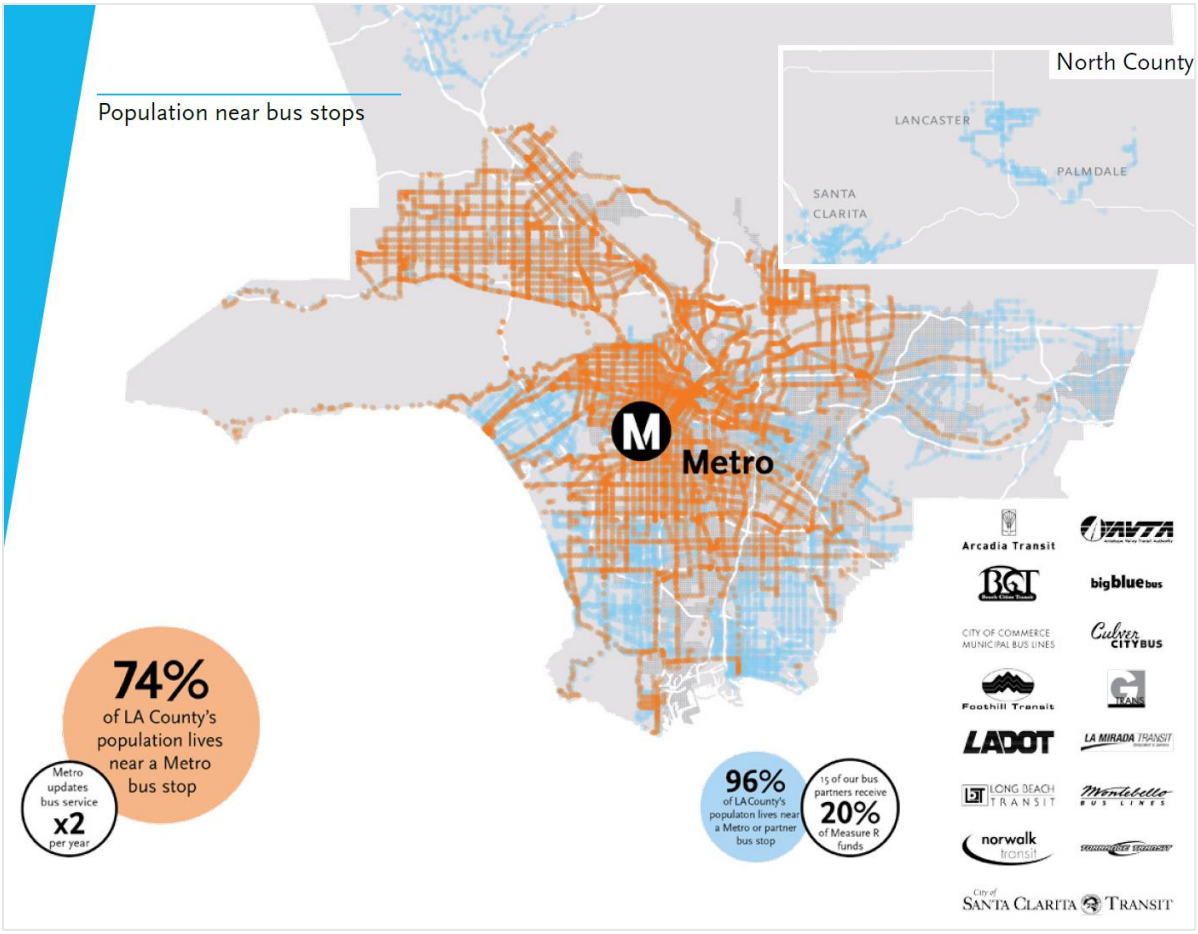

Figure 7. Population within ¼ Mile of Bus Stops[17]

Similar to rail ridership, bus ridership has also been declining over recent years,[18] but Metro has planned a major reorganization that includes overhaul of the agency's operations, marketing, and strategy. Metro's NextGen Bus Study is currently gathering public feedback for system reorganization to better serve current transportation patterns and future trends.[19]

[17] Metro 2008-2015 Quality of Life Report. https://media.metro.net/docs/report_qualityoflife.pdf
[18] http://isotp.metro.net/MetroRidership/Index.aspx
[19] https://www.metro.net/projects/nextgen/overview/

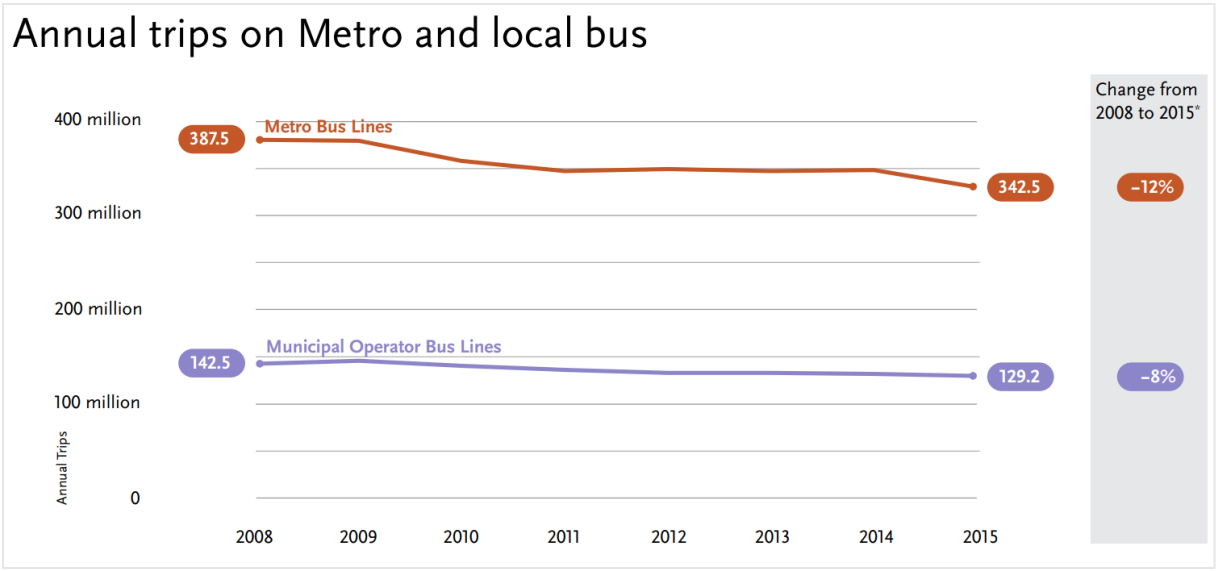

Figure 8. Annual Trips on Metro and Local Bus[20]

Walking and Biking

Human-powered modes including walking and biking are included in a category referred to as active transportation. There are numerous societal benefits associated with active transportation, including improved access to public transit, reduced congestion and greenhouse gas emissions, improved public health from physical activity, lower transportation costs and increased local economic activity. In 2015, 3% of L.A. County commuters walked to work,[21] and less than 1% of residents commuted regularly by bicycle, although the absolute number of cyclists (47,075) was nearly double that of 2005 (25,477).[22]

One of the best ways to encourage biking as a transportation choice is to provide protected bike lanes and paths. Providing physical protection prevents injury and improves quality of experience; it is an especially important factor for recruiting new cyclists. Several recent efforts to create protected bike lanes have faced high profile opposition from parts of the surrounding neighborhoods. For example, the City of Los Angeles has restored vehicular lanes in Playa del Rey, reversing traffic calming measures that made room for protected bike lanes.[23]

[20] Metro 2008-2015 Quality of Life Report. https://media.metro.net/docs/report_qualityoflife.pdf
[21] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality
[22] https://thesource.metro.net/2017/05/17/the-ongoing-bike-revolution-in-los-angeles-county/
[23] https://la.curbed.com/2017/10/18/16501128/playa-del-rey-road-diet-lane-reduction

Access and Mobility

High Quality Transit

The ability to physically connect residents to jobs and services is crucial to enabling a healthy economy and achieving economic sustainability. Approximately 40% of jobs in L.A. County are within a half-mile of Metro rail, BRT, or Metrolink stations. The local bus network in L.A. County also plays an important role in providing public transportation access to most L.A. County residents by carrying the majority of daily transit trips, but only 41% of County residents live within a quarter-mile of high-frequency bus stops.[24]

One way to measure overall access is by looking at High Quality Transit Areas, which are defined by SCAG as areas within one-half mile of a rail or a Bus Rapid Transit (BRT) transit stop. They also include corridors where buses pick up passengers every 15 minutes or less during peak commute hours. As of 2012, more than 1.5 million households and 2.3 million jobs were located in High Quality Transit Areas within L.A. County.[25] As shown on the map on the following page, high quality transit access is concentrated in Downtown Los Angeles, and decreases further out. SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy includes the expansion of High Quality Transit Areas in South Los Angeles and the San Fernando Valley.

[24] Metro 2008-2015 Quality of Life Report. https://media.metro.net/docs/report_qualityoflife.pdf
[25] SCAG 2016 RTP Pg. 25

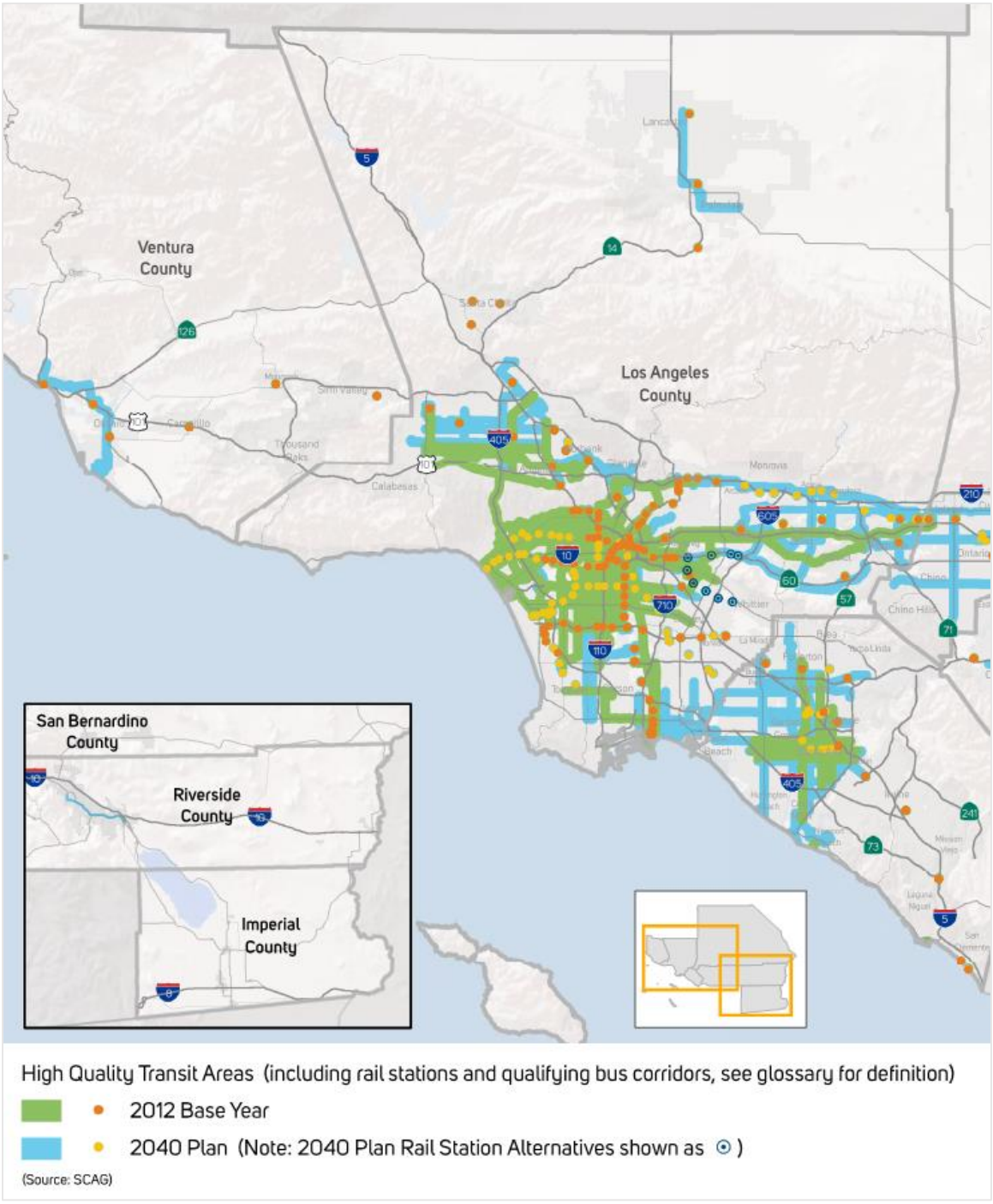

Figure 9. Existing and Planned High Quality Transit Areas in L.A. County (2012)[26]

Transportation Costs

Another important measure of transportation access is cost, particularly as it relates to household incomes. Higher transportation costs mean that households will have less money to spend on housing, food, clothing, savings, and other essentials. Transportation costs in the Los Angeles Metropolitan Region are amongst the highest in the country at 20% of total income.[27] For a typical household in the Los Angeles/Long Beach/Anaheim area, with an annual income of $60,252 and 1.28 commuters per household, transportation costs accounted for $12,292 annually in 2016,[28] creating a significant burden especially when considered in the context of the region's high housing costs.

Transportation costs as a percentage of total income for selected regions		
	21%	San Diego County
Los Angeles Metropolitan Region	**20%**	
	15%	Chicago
San Francisco	11%	
	9%	New York City

Figure 10. Transportation Costs Compared to Total Income for Selected Regions[29]

Lower-income residents often ride transit because they cannot afford or otherwise lack access to an automobile. About 61% of Metro's bus riders live below the poverty line, while 39% of rail riders live below the poverty line.[30] It is also important to consider the combined cost burden of housing and transportation; if and when lower-income residents move further from transit due to increased housing costs, they may face longer commutes and higher transportation costs.

[26] REVISION. http://revision.lewis.ucla.edu/ (joint project between UCLA Lewis Center and SCAG)
[27] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality
[28] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality
[29] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality
[30] Hymon, S. (2018). *Latest customer satisfaction survey*. The Source. Retrieved from https://thesource.metro.net/2018/03/15/metros-latest-customer-satisfaction-survey/

Transit Oriented Communities

Transit Oriented Communities (TOCs) are Metro's vision for shaping vibrant communities around transit. They promote sustainable living and equity by offering a mixture of uses close to transit in order to support households of all income levels. They are supported by thoughtful urban design, building densities, parking policies, and first/last mile facilities that support transit ridership and reduce auto dependency. TOCs are similar to the concept of Transit Oriented Development, but focus on the larger community rather than single developments; they include areas within 1.5 miles of a transit stop rather than 0.5 miles.

Policies and programs that support the implementation of TOCs include:

- Under the Sustainable Communities and Climate Protection Act of 2008 (SB 375), certain multi-family developments within High Quality Transit Areas qualify for expedited environmental review with the aim of reducing VMT and resulting greenhouse gas emissions.
- A state package of housing bills passed in 2017 provides incentives to develop affordable housing near transit, including streamlining environmental review and granting density bonuses for development that includes affordable housing. These bills are outlined in the 'State, Regional, and Local Policy Initiatives' section.
- Similar incentives are also included in the City of Los Angeles's TOC ordinance, which was enacted after voters passed Measure JJJ in 2017.
- Under Measure M, cities may use local return funding for projects that encourage TOCs that improve first and last mile connections and increase housing opportunities near transit.[31]
- Metro additionally offers competitive grants to cities to help fund TOC projects.[32]

New mobility options, such as rideshare, bikeshare, and motorized scooters, can improve first/last mile connections and may encourage transit ridership for those that previously considered transit too far away to be accessible. This can be further strengthened by improving coordination between new mobility companies, transit operators, and the public agencies that oversee street and sidewalk design, maintenance, and enforcement.

[31] https://www.metro.net/projects/transit-oriented-communities/

[32] https://www.metro.net/projects/tod/

Preventing Displacement

The expansion of public transit has the potential to displace residents and businesses if it is not accompanied with anti-displacement policies. Academic studies demonstrate that adding a transit station to a neighborhood increases property values.[33] A 2015 study of Los Angeles transit and property values found that multi-family properties within a quarter-mile of proposed stations had double the value of similar properties located more than a mile from the stations.[34] Increased property values can lead to increased housing prices and commercial rents, which can lead to displacement. Affordable housing close to Metro stations can allow existing and new residents to live close to transit; Metro has a Joint Development Affordable Housing Policy, which requires 35% of housing units built on Metro-owned property to be affordable to households earning 60% of area median income or below.[35]

[33] Ryan, S. (1999). Property Values and Transportation Facilities: Finding the Transportation-Land Use Connection. *Journal of Planning Literature*. 13(4), pp. 412 - 427. doi:10.1177/08854129922092487

[34] Zhong, H., & Li, W. (2016). Rail transit investment and property values: an old tale retold. *Transport Policy*. Vol 51, 33-48. doi:10.1016/j.tranpol.2016.05.007

[35] https://www.metro.net/projects/joint_dev_pgm/

Infrastructure Investment

Recognizing the benefit of an expanded transit system and investments in maintaining existing infrastructure, L.A. County residents recently approved Measure M with over 70% of the vote, authorizing a permanent ½-cent sales tax to fund transit expansion, traffic improvement and enhanced mobility.[36] The majority of funding is allocated to transit construction and operations.

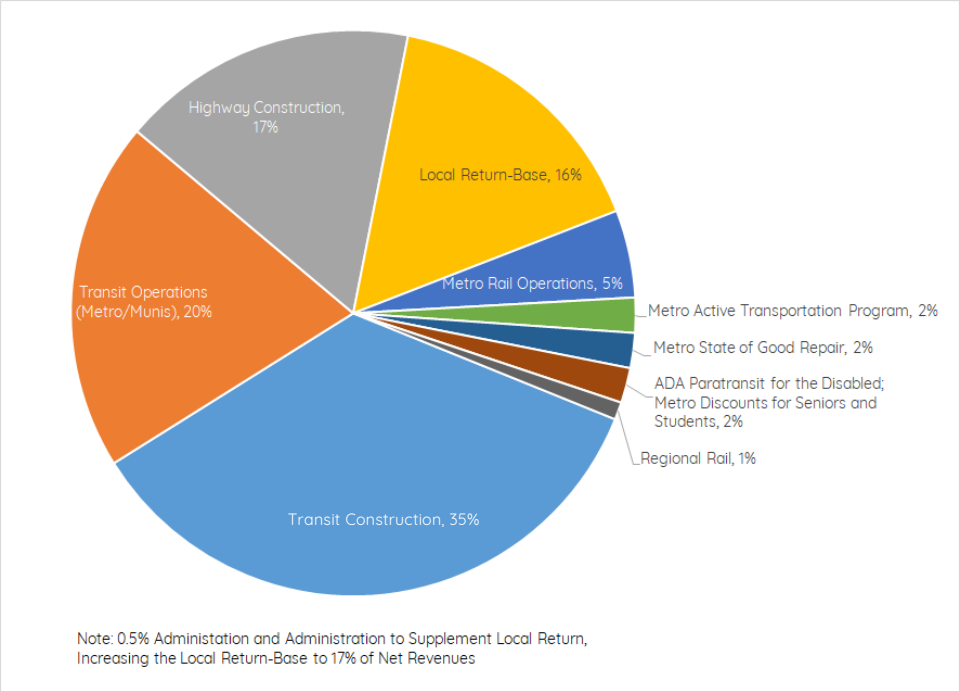

Figure 11. Measure M Funding Allocations[37]

Highway construction will receive 17% of Measure M revenue; this funding explicitly includes system connectivity investments that will facilitate goods movement in the County.[38] Priority projects include:

[36] Measure M ordinance. http://theplan.metro.net/wp-content/uploads/2016/09/measurem_ordinance_16-01.pdf. Note this is the current expenditure breakdown.

[37] https://www.metro.net/projects/itoc-measurem/

[38] http://theplan.metro.net/wp-content/uploads/2016/09/measurem_ordinance_16-01.pdf

- High Desert Multi-Purpose Corridor SR-14 to SR-18: Builds the L.A. County portion of a new freeway and toll lanes with parallel rail/transit service and a bikeway to connect cities in the Antelope and Victor Valleys, including Palmdale and Lancaster.
- Add one truck lane and one carpool lane to portions of Interstate 5.
- Interchange improvements to I-605, SR-57/SR-60, and I-405/I-110.
- Improvements to the 710 corridor to reduce congestion and reduce air pollution in adjacent neighborhoods, and coordination with the Ports to facilitate green goods movement within the corridor, including two Zero-Emission truck lanes each direction from Long Beach to Commerce for a total of 18 miles.[39]

Local return funding under Measure M can be used by cities to meet their local needs. Qualified uses for local return funding include local roads maintenance, traffic control measures, transit, complete streets programs, and active transportation.[40]

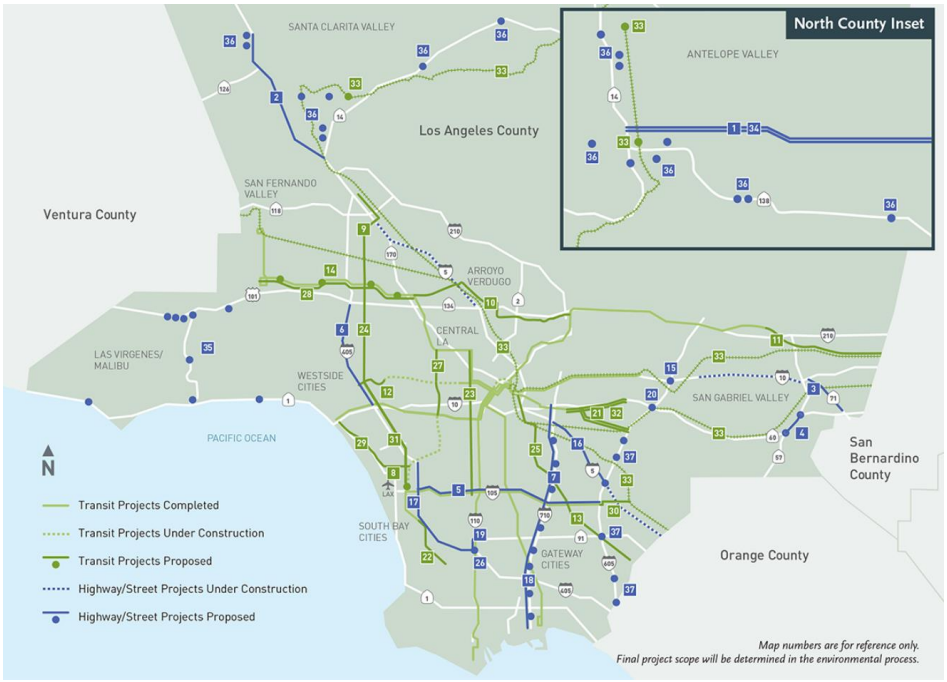

Figure 12. Metro Transit and Highway/Street Projects[41]

[39] https://www.metro.net/projects/i-710-corridor-project/710_overview/
[40] http://media.metro.net.s3.amazonaws.com/projects_studies/local_return/images/measure_m_local_return_guidelines.pdf
[41] http://theplan.metro.net/#objectives

The California legislature recently approved a 12 cent per gallon gas tax increase that will provide $52 billion for the state's transportation needs over the next decade (SB 1, Beall, 2017). Public sentiment towards public transportation, active transportation, and smart and equitable transit-oriented development is more positive than ever. However, anti-tax sentiment led to a November 2018 ballot measure that threatens to repeal the tax.

Pedestrian and Cyclist Safety

Complete Streets are designed and operated to enable safe access for all users, including pedestrians, cyclists, motorists and transit riders of all ages and abilities. The design of a Complete Street may include sidewalks, bike lanes, bus lanes, public transit stops, frequent and safe pedestrian crossings, accessible pedestrian signals, curb extensions, and other traffic calming measures.[42] Several public agencies in L.A. County have adopted Complete Streets policies - Metro's has been in place since 2014 - although Complete Streets are relatively few in number throughout the County as of today.

Living Streets incorporate all aspects of Complete Streets, and additionally include light-colored cool pavement, stormwater management and capture, tree canopies, bioswales and other green infrastructure. Living Streets are a strategy that can be deployed to adapt to a changing climate, while also making places more livable and resilient.[43]

Additional investments are necessary, especially in order to protect cyclists and pedestrians from vehicle collisions. Since 2006, there has been an upward trend in cyclist injuries and fatalities in L.A. County, which has happened concurrently with increases in biking and bike commuting in the region.[44] Areas with high truck traffic volumes can also pose a safety hazard for people who walk and bike, and may further deter the use of these modes due to noise, fumes and lack of a human scale. With worsening congestion, many trucks re-route through residential neighborhoods, causing nuisance issues as well as physical damage to roads and sidewalks.[45]

[42] https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/what-are-complete-streets/
[43] *Living Streets: A Guide for Los Angeles.* ttps://healthebay.org/sites/default/files/pdf/fact-sheets/final%20living_streets_Guide_final-011916.pdf
[44] https://www.lewis.ucla.edu/publication/bicycle-crash-risk-how-does-it-vary-and-why/
[45] *Harbor Community Off-Port Land Use Study.* http://hcbf.org/wp-content/uploads/2017/11/HCBF-Harbor-Community-Off-Port-Land-Use-Study-FINAL-WEB-11.3.2017.pdf

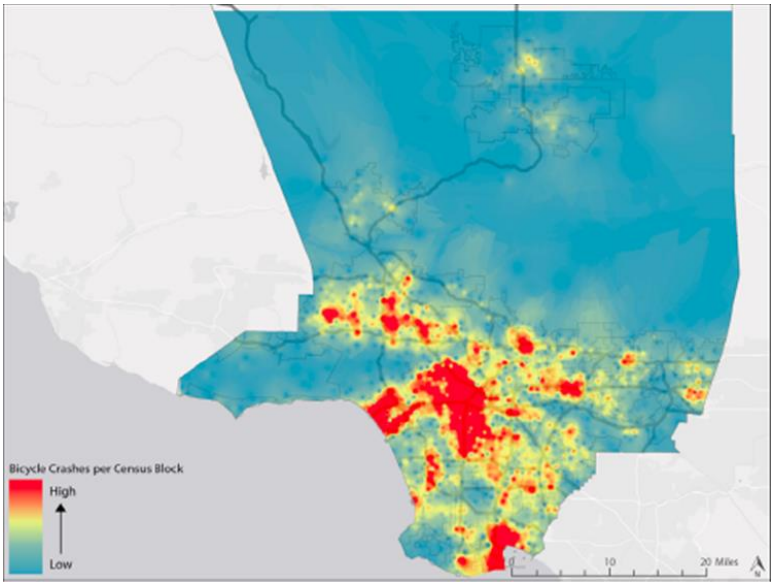

Figure 13. Heat Map of Cyclist-Involved Crashes Resulting in Injury in L.A. County, 2003-2014[46]

Recently, there has been a multinational movement for governments to adopt Vision Zero, a campaign to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility.[47] Traffic collisions are the leading cause of death for children in L.A. County. In 2015, the City of Los Angeles launched Vision Zero Los Angeles, with the goal of eliminating all traffic deaths by 2025 by implementing strategic safety programs and infrastructure improvements.[48] The County adopted a Vision Zero policy in 2017 for unincorporated areas, where approximately 11% of fatal and severe injury victims are pedestrians and 6% are cyclists.[49]

Collisions are chiefly attributed to unsafe vehicle speeds, as well as impaired and distracted driving. Further, racial and ethnic minorities are disproportionately affected as crash victims, which is possibly tied to the fact that Hispanics and African Americans, on average, drive less and walk more than other groups.[50] According to the CDC, Hispanics suffered a pedestrian fatality rate nearly 62% higher than that of non-Hispanic whites from 2000 to 2007. In the same timeframe, African Americans suffered a rate 73% higher.[51]

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[46] https://www.lewis.ucla.edu/publication/bicycle-crash-risk-how-does-it-vary-and-why/

[47] https://visionzeronetwork.org/about/vision-zero-network/

[48] http://visionzero.lacity.org/faq/

[49] http://file.lacounty.gov/SDSInter/bos/supdocs/111641.pdf

[50] *Dangerous by Design,* AARP

[51] The CDC's Web-Based Injury Statistics Query and Reporting System

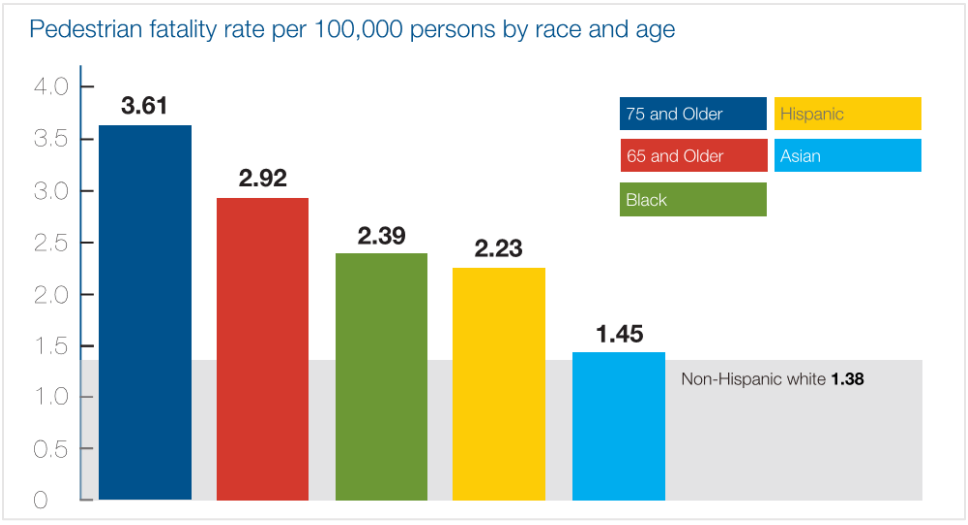

Figure 14. Pedestrian Fatality Rate per 100,000 Persons by Race and Age[52]

Vision Zero strategies to reduce fatal and severe collisions include traffic calming, increased enforcement efforts to reduce vehicle speeds, and signage to alert drivers to pedestrian and cyclist crossings. In 2017, the City of Los Angeles completed 90 miles of corridor improvements and issued 27% more speeding tickets than in 2016.[53]

[52] The CDC's Web-Based Injury Statistics Query and Reporting System
[53] http://visionzero.lacity.org/projects/

Congestion

The average delay for peak hour automobile commuters in L.A. County accumulates to 80 hours annually. Congestion cost the L.A. metropolitan region economy $13.3 billion in lost productivity in 2014 or $1,711 for each peak hour commuter. The Texas Transportation Institute measures travel time reliability with a "Planning Time Index," which is a coefficient for how much more time must be allotted for a peak-time commuter to be late for only 1 day per month. Los Angeles is the worst region of those measured, with a Planning Time Index of 3.75.[54] Note that congestion can sometimes be an indicator of a healthy economy, as travel speeds in Los Angeles are lowest in areas where job accessibility is the highest.[55]

Under the California Environmental Quality Act, state and local agencies are required to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts as feasible. Prior to 2013, transportation impacts were analyzed using metrics such as vehicle delay and level of service (LOS). However, with the signing of SB 743 in 2013, the Governor's Office of Planning and Research (OPR) was required to identify new metrics for identifying and mitigating transportation impacts. OPR identified Vehicle Miles Traveled (VMT) per capita, VMT per employee, and net VMT as new metrics.[56] Rulemaking is still underway and a handful of cities in the Los Angeles region have moved to using the revised metrics.

[54] Texas Transportation Institute Urban Mobility Scorecard (2015)

[55] Taylor, B., Osman, T., Thomas, T., & Mondschein, A. (2016). Not So Fast: A Study of Traffic Delays, Access, and Economic Activity in the San Francisco Bay Area.

[56] http://www.dot.ca.gov/hq/tpp/sb743.html

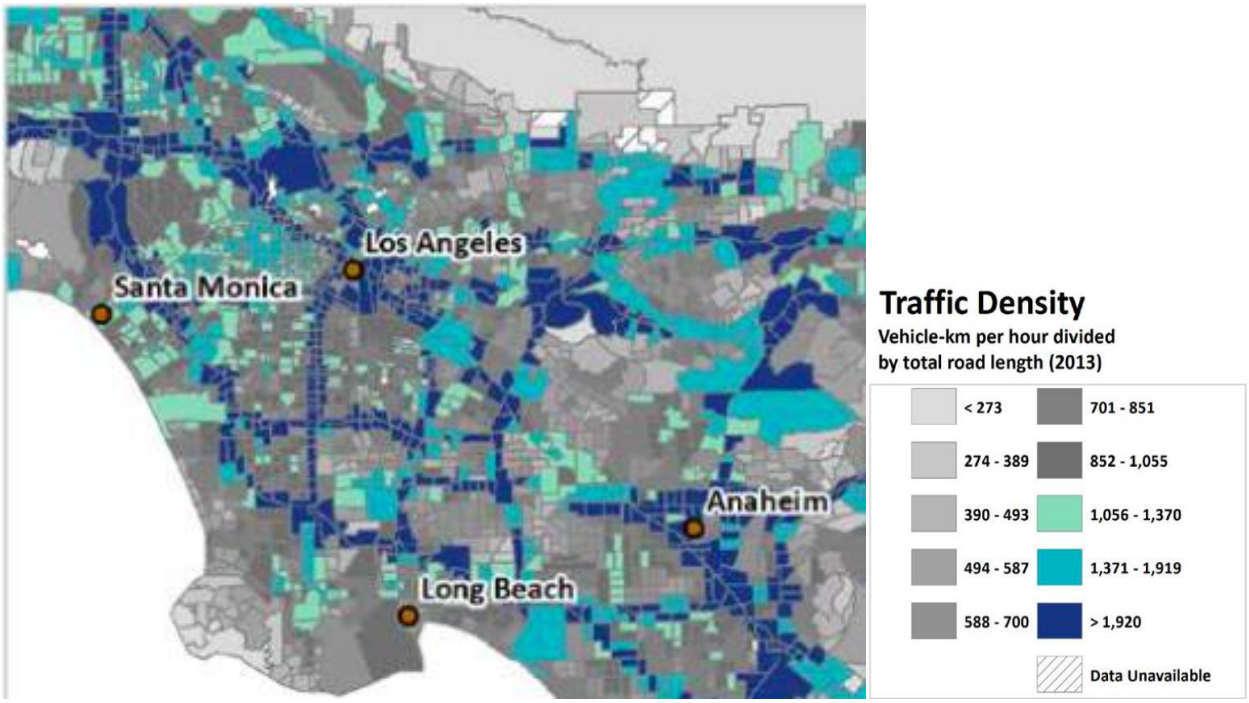

Figure 15. Traffic Density in the Greater Los Angeles Area[57]

[57] https://oehha.ca.gov/media/downloads/calenviroscreen/report/ces3report.pdf#page=67

Air Quality and Greenhouse Gas Emissions

Gasoline and diesel-powered vehicles produce significant amounts of nitrogen oxides, carbon monoxide, particulate matter, hydrocarbons, greenhouse gases, and other pollutants.[58] Major roadways and high levels of traffic congestion increase exposure to air pollutants from vehicle exhaust that can cause many adverse health outcomes, including low birth weights, increased rates of autism and asthma, and increased injuries from collisions when drivers use surface streets to avoid highway congestion.[59]

Air pollutants are also more concentrated near their source, and neighborhoods adjacent to highways and ports are largely low-income communities of color, the result of a long history of discriminatory practices. This is a major environmental justice issue; the rates of asthma-related emergency room visits in South L.A. neighborhoods are amongst the highest in the region, and more than twice the County average.[60] The City of Los Angeles has adopted more stringent air filtration requirements for new homes built within 1,000 feet of freeways, although it has not placed limits on how closely homes can be built.

The I-710 corridor, along which a significant share of goods enter the United States, is home to communities that are made up of 90% people of color and have some of the County's lowest human development scores, largely due to air quality problems. The Portrait of Los Angeles County reported identified this environmental justice issue as the most persistent equity issue in the County.[61]

There have been significant efforts to reduce the harmful emissions from goods movement throughout the region. Between 2006 and 2015, the implementation of the San Pedro Bay Ports Clean Air Action Program reduced diesel particulate matter by 82%, nitrogen oxides by 5% and sulfur oxides by 90%.[62] The San Pedro Bay Ports Clean Truck program, a core part of the Clean Air Action Plan, led to a 97% decrease in diesel particulate matter from trucks and a 91% decrease in sulfur oxides from 2005 to today.[63] At the state level, the California Sustainable Freight Action Plan requires that State policies, programs, and investments be initiated on pilot projects aimed at the State's primary trade corridors, integrating alternative fuels, advanced technologies, freight and fuel infrastructure, and local economic development opportunities.[64]

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[58] Union of Concerned Scientists, *Vehicles, Air Pollution, and Human Health*
[59] Enviroscreen
[60] ERC 2017
[61] http://www.measureofamerica.org/los-angeles-county/
[62] SCAG, 2016 RTP/SCS
[63] https://www.portoflosangeles.org/environment/progress/initiatives/clean-truck-program/
[64] http://www.casustainablefreight.org/

In addition to reducing the localized health impacts of transportation, the transformation of the sector is essential to reduce greenhouse gas (GHG) emissions and contribute to the State's climate action goals. Tailpipe emissions from cars and trucks contribute more than a third of emissions in Los Angeles County, more than any other sector. Cleaner fuel sources, advancements in vehicle technology and transit information systems, and investments in new public transit infrastructure can all contribute to reducing these GHG emissions.

Under the Sustainable Communities Act, regions are required to set targets for GHG emissions reductions in per capita passenger vehicle emissions. SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) aim to decrease emissions from transportation by 8% by 2020, 18% by 2035 and 22% by 2040, compared to 2005 levels.

Electric Vehicles

On-road transportation accounted for 33.5% of L.A. County's greenhouse gas emissions in 2010 and is the major contributor to poor air quality across the Los Angeles basin. Electrification of the transportation system, combined with cleaner sources of electricity and an overall reduction in the miles traveled per person, will reduce the negative impact of our car culture - most notably reductions in air and climate pollution. The transition of the transportation system to electricity has potential opportunities (additional revenue streams, load balancing, etc.) and threats (increased demands, higher electricity prices, etc.) for the power grid.

Electric vehicle sales are on the rise. In 2015, plug-in electric vehicles made up around 3% of the 6.3 million registered automobiles in L.A. County. Ownership is concentrated in wealthier neighborhoods, as indicated in the below map. Currently, most charging takes place in dedicated spaces, such as home garages and fleet facilities. Publicly accessible charging infrastructure needs to expand in order to facilitate the growth of electric vehicle adoption. As of 2015, there were 964 publicly-accessible charging in L.A. County.[65] As a point of comparison, there are an estimated 2,035 gas stations,[66] although it takes significantly longer to charge an electric vehicle than it does to fuel a conventional automobile.

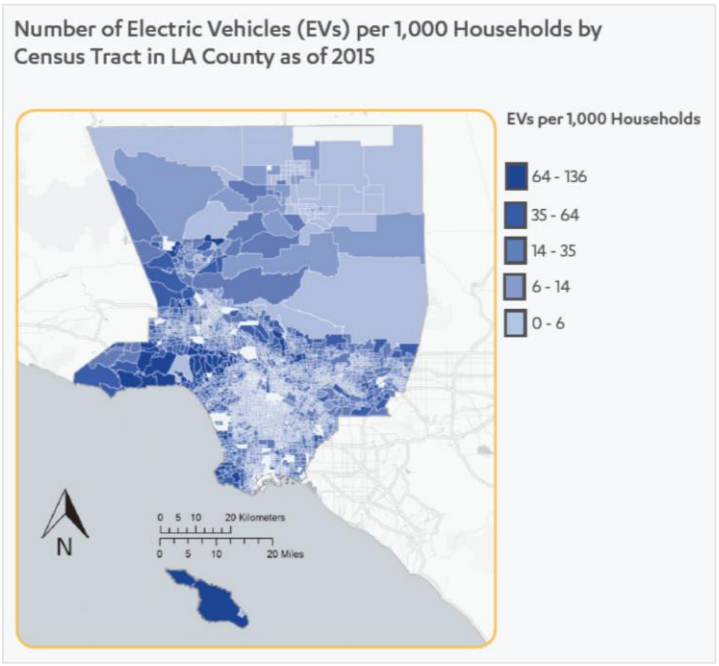

Figure 16. Number of Electric Vehicles per 1,000 Households in L.A. County[67]

[65] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality
[66] http://www.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html),
[67] 2017 Sustainable LA Grand Challenge Environmental Report Card on Energy and Air Quality

Emerging Trends

The transportation sector is rapidly evolving, with new technologies and business models presenting new mobility options to consumers at a breakneck pace. These emerging trends provide both opportunities to expand access and mobility, while also presenting the threat of worsening congestion and environmental impacts. Whether they help or harm the County achieve its transportation goals is likely to depend upon how the policy landscape evolves to shape their course of development.

Bike and Scooter Sharing

There are a growing number of bike and scooter sharing programs that provide convenient access to human-powered (and sometimes electric-assisted) methods of transportation. Current public programs and private operators within L.A. County include Metro Bike Share in Downtown, Port of L.A. and Venice; Breeze Bike Share in Santa Monica; Bruin Bike Share at UCLA; Lime in Santa Monica; and Bird in Santa Monica, Venice, and Westwood.

The recent introduction of bike and electric scooter sharing programs has the potential to improve first/last mile connectivity by expanding access to the transit network. Additionally, increased usage of shared bicycles and scooters may encourage development of additional bike infrastructure, including protected bike lanes.

However, private operators of dockless technologies will need to work with public agencies to address safety, sidewalk accessibility, and other issues, which may require new infrastructure and/or enforcement mechanisms. Another potential risk is the need to establish processes for removing broken or abandoned equipment.

Ride Hailing

Since the introduction of ride hailing companies such as Uber and Lyft, the presence of ride hailing vehicles on the roads has increased at an exponential rate (see below chart). Ridership data for these companies, also known as Transportation Network Companies, are not publicly available in L.A. County, which makes it difficult to determine their net effect on VMT and congestion. However, we know that they have widespread reach throughout the region. Between September and November of 2016, 6.5% of County residents over the age of 15 hailed a Lyft. In the fall of 2016, L.A. County customers hailed 2.1 million Lyft trips per month.[68]

[68] Brown, A. E. (2018). Ridehail Revolution: Ridehail Travel and Equity in Los Angeles. UCLA. https://escholarship.org/uc/item/4r22m57k

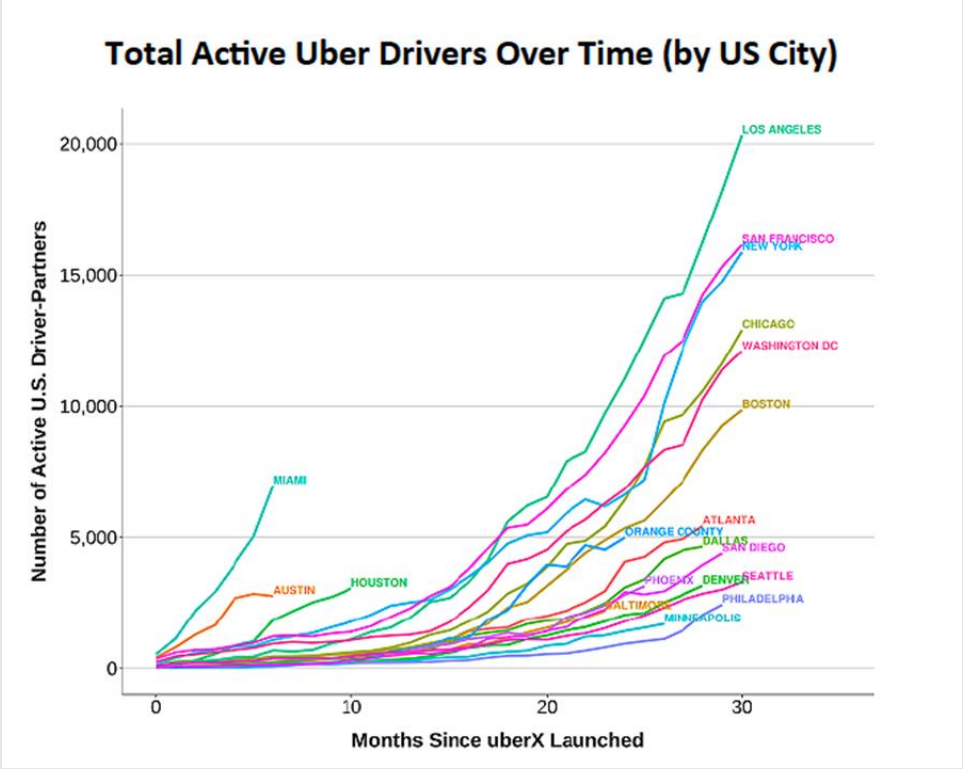

Figure 17. Total Active Uber Drivers Over Time by US City[69]

Ride hailing companies offer a number of service options, including the ability to rideshare utilizing UberPOOL and Lyft Line, which allow customers to share rides via dynamic routes that are based on customer pick-up and drop-off locations. Lyft is also partnering with public agencies to provide on-demand paratransit services for customers with limited mobility.

The ride hailing industry is characterized by limited or rapidly changing governance structures. This means that County residents, through their elected and appointed officials, have less influence and control over these private companies than they do over the more highly regulated taxi industry regarding pricing, passenger rights, and other matters. However, some government agencies are taking a more proactive approach and seeking public-private partnerships that benefit the public interest. In 2017, Metro announced a "MicroTransit" pilot program, which seeks to deploy on-demand ridesharing in the form of vans and small buses, which carry more passengers than conventional ride hailing vehicles. Metro has awarded contracts to three vendors to plan and develop the pilot program, which it plans to launch in 2019.

[69] Krueger, Alan B., and Jonathan V. Hall. "An Analysis of the Labor Market for Uber's Driver-Partners in the United States." Princeton University Industrial Relations Section Working Paper 587 (2015).

Ride hailing and bike sharing have begun to converge in new and innovative ways. The City of Monrovia, California has partnered with Lyft and LimeBike in a new program called Go Monrovia. The City now subsidizes all Lyft rides within the designated Go Monrovia service area, charging riders only $0.50 per ride. Additionally, LimeBikes are subsidized to provide 30-minute rides for only $1. The City hopes the Go Monrovia program will make it easier for residents and visitors to get around without worrying about driving or parking.[70] Ride hailing companies have also been getting into the bike sharing business in recent months, with Uber acquiring Jump and Lyft acquiring Motivate.

Autonomous Vehicles

An autonomous vehicle is one that can drive itself with little or no human input. Autonomous vehicles may be fully or semi-autonomous and connected to other technology at various levels, including devices within the car, other vehicles, and surrounding infrastructure. These technologies have the potential to provide a safer, cleaner, and more accessible way to travel as compared to conventional vehicles. However, they may also lead to a dramatic increase in VMT as a result of the more efficient flow of vehicles and increased convenience of riding in a car. Strong public policy is required to guide the implementation of these technologies in a manner that will maximize public benefit and minimize negative impacts.

The overall land use, human health, greenhouse gas, and affordability implications of connected and autonomous vehicles are unknown. One possibility is that they could provide an affordable and safe mobility option that will encourage County residents to give up their private vehicles and opt for TOCs – with connected and autonomous vehicles playing a small role within an ecosystem that includes a variety of sustainable and active modes of transportation. A more pessimistic view is that County residents will elect to live in exurban locations far from employment centers, given the option to commute in a "living room on wheels." Public policy, including pricing signals, is likely to play an important role in these household economic decisions and their accompanying impacts.

[70] http://abc7.com/business/monrovia-partners-with-lyft-limebike-to-create-transport-program/3236808/

Draft Goals, Potential Strategies and Indicators

The following are major goals and some of the potential strategies in support of transportation reliability and resilience. While there are hundreds of possible strategies related to transportation, we have focused on those that will benefit most from collaborative planning and implementation across the County. We also intend for each goal to center around equity, so as to reduce disparate outcomes experienced by disadvantaged communities, particularly low income communities of color, with respect to benefits, resources, and impacts, related to energy. Additionally, transportation goals and strategies must take resilience into consideration, including but not limited to the impacts of a changing climate. Economic benefits and risks are also key concerns. Please note that these goals and strategies are presented as a basis for discussion; our intention is that they be edited, removed, or added to as a result of stakeholder input.

Draft Goals and Potential Strategies

Goal A: Enhance communities and lives through mobility and equitable access to jobs and economic opportunity.

Potential Strategies:

- Support policies that increase affordable housing and jobs near transit
- Expand express bus service to low-income neighborhoods
- Target infrastructure and service investments towards those with the greatest mobility needs
- Expand the transportation system as responsibly and quickly as possible
- Continue to subsidize transit fares and provide easy access to transit passes for seniors, students, and low-income households
- Encourage housing closer to job centers to reduce commute time and cost
- Allow free or low-cost transfers between transit providers to improve system interoperability
- Work proactively with private industry to provide first/last mile solutions that are safe and affordable
- Develop workforce training programs to prepare workers for job opportunities in the advanced vehicle technology sector

Goal B: Provide high-quality mobility options that enable people to spend less time traveling.

Potential Strategies:

- Transform our built environment to increase transit and active transportation usage
- Expand and modernize our public transit network
- Make walking and biking safer and more convenient by redesigning our streets
- Manage our parking supply to encourage sustainable transportation choices
- Ensure that our public policies prioritize walking, biking, and public transit

- Explore opportunities for expanding access to shared, demand-responsive transportation options for everyone

Goal C: Improve transportation-related health and safety outcomes

Potential Strategies:

- Employ strategies to mitigate the negative health effects of transportation on adjacent neighborhoods
- Support the adoption of Vision Zero policies throughout the County
- Improve biking infrastructure including protected paths
- Employ strategies to improve crosswalk safety for pedestrians, such as scramble crossings at intersections and mid-block crosswalks on longer blocks
- Improve traffic enforcement
- Improve safety of the transit system and reduce roadway collisions and injuries
- Manage congestion and reduce conflicts between the movement of goods and people on streets and highways

Goal D: Decarbonize freight corridors

Potential Strategies:

- Accelerate the adoption of electric vehicles and low carbon fuels for heavy trucks, locomotives, harbor craft, and cargo handling equipment
- Improve the efficiency of goods movement by addressing truck congestion bottlenecks throughout the County and creating truck-only lanes
- Accelerate the adoption of zero-emissions vehicles for first/last mile goods movement
- Remove freight activities from residential areas
- Promote advanced technologies at intermodal facilities and warehouses

Goal E: Reduce energy consumption and carbon emissions by transportation sector

Potential Strategies:

- Encourage policies that reduce VMT and increase usage of sustainable modes such as walking, biking, and public transit
- Provide low-cost, reliable, and low-carbon mobility alternatives to privately owned vehicles
- Deploy electric vehicle charging stations, especially in disadvantaged communities
- Develop and support the zero emissions vehicle industry in L.A. County, including high quality jobs in manufacturing, installation, and maintenance
- Accelerate the adoption of light, medium, and heavy duty electric vehicles

Goal F: Improve transportation system reliability, user experience, and resiliency

Potential Strategies:

- Implement traffic demand management policies such as toll roads and congestion pricing to alleviate congestion, improve air quality, fund transportation improvements and bolster the economic health of the region
- Develop simplified, sustainable, and comprehensive pricing policies to support the provision of equitable, affordable, and high-quality transportation services
- Reinforce the prioritization of on-schedule transit to reduce wait and transfer times
- Increase operations and maintenance funding of the transportation system in relation to capital investment
- Invest in a world-class bus system that is reliable, convenient, and attractive to more users, for more trips

Goal G: Amplify regional efforts to achieve a sustainable transportation system

Potential Strategies:

- Help drive mobility agendas, discussions, and policies at the state, regional, and national levels

Our County

Potential Indicators

All indicators apply to L.A. County unless otherwise stated.

Clean Vehicles and Infrastructure	Percent Zero Emissions Vehicles
	Location of EV Charging Stations
Accessibility and Mobility	Vehicle Miles Traveled
	Transportation Affordability
	Transit Reliability
	Transit Use
	Commute Times and Mode of Transport
	Rate of Personal Vehicle Ownership
	Accessibility to Rail and Express Bus Transit
	Employment near Rail and Express Bus Transit
	Compliance of Metro Rail Stations with American with Disabilities Act
Healthy and Safe Travel	Miles of Bikeway
	Cities with Complete Streets Policies and Active Transportation Plans
	Pedestrian and Biking Collisions
	Sidewalk Conditions
System Integration and Operations	County Transportation Funding by Mode
	Road Quality
	Travel Reliability

Our County

Cross-Cutting Themes

Economy & Workforce Development

- An effective transportation system enables a vibrant economy
- Transportation system expansion provides jobs in construction as well as operations and maintenance.
- Zero emissions vehicle technologies require workforce training to prepare workers for new opportunities in the advanced transportation sector.
- Some vehicle repair and maintenance jobs and others associated with personal vehicle use (parking, valet, car wash, driving) will be lost in the transition to an improved transit network.
- The growth of rideshare services has adversely affected taxi drivers and self-driving vehicles will likely affect many more drivers' jobs in the County.

Public Health & Safety

- Motor vehicle traffic collisions accounted for 254,561 people injured and 3,435 people killed in 2015.
- Vehicle emissions have the biggest negative impact on air quality in the County. Close proximity to freeways is linked with negative health outcomes.
- Truck traffic and goods movement corridors negatively impact air quality and the safety of pedestrians, cyclists and other motorists.
- Active transportation offers many physical and mental health benefits, including lower risk of heart disease, adult-onset diabetes, high blood pressure, and stress.

Housing

- New mobility options, including first/last mile solutions, can enable more residents to choose a car-free lifestyle and live in denser, more walkable TOCs.
- The transition to TOCs will reduce the land dedicated to parking infrastructure.
- Densifying land adjacent to transit hubs will provide new affordable housing while resulting in the transition of some existing single-family homes to multi-family units.
- Local development standards can either exacerbate or help deter automobile reliance.

Water

- Living Streets incorporate design elements that capture and treat stormwater.
- Zinc pollution is a major driver of stormwater regulations, and much of it comes from tires as they wear down.
- Copper from brake pads contributes to water pollution, although it is being phased out as a result of SB 346.
- The reduction of engine oil used in EVs compared to gasoline vehicles will likely result in less stormwater pollution.
- Public rights of way near flood control channels are opportunities for active transportation infrastructure.

Energy & Climate

- Transportation and the fuels that power it, significantly contribute to greenhouse gas emissions; on-road transportation accounted for more than 33% of L.A. County's greenhouse gas emissions in 2010.
- Rising temperatures and hot days will increase road degradation, as well as increase transit system downtime due to rail buckling.
- Increases in severe weather such as precipitation events will damage roads and bridges, and lead to more vehicle crashes.
- Cool pavements and increased vegetative cover along roadways can reduce the urban heat island effect.
- Sea level rise and increases in storm surge may limit port deliveries and damage roads, bridges and airports.
- Electrification of the transportation system, combined with an overall reduction in the miles traveled per person, will reduce air and climate pollution; the transition will create both potential opportunities and threats for the power grid.
- Electric vehicle sales are on the rise, but ownership and infrastructure are concentrated in wealthier neighborhoods.
- Gasoline sales are on the decline while diesel fuel sold has increased between 2010 and 2015.

Our County

State, Regional, and Local Policy Initiatives

A number of regional planning efforts and state have established policies and set targets around transportation improvements, efficiency, and fuel sources.

State Policy Initiatives

SB 375 (Steinberg, 2008)	Under the Sustainable Communities Act, CARB sets regional targets for GHG emissions reductions percent change in per capita passenger vehicle emissions relative to 2005. As of October, the targets for the Southern California Association of Governments will be -8% by 2020 and -19% by 2035.
SB 535 (de Leon, 2012)	Under the bill, polluters pay into a Greenhouse Gas Reduction fund that distributes millions of dollars to projects in cleaner freight, affordable housing near transit, and public transit.
SB 743 (Steinberg, 2013)	Creates exemptions from the California Environmental Quality Act for projects in areas served by transit.
Governor Jerry Brown's 4th Inaugural Address, 2015	Stated goals of (1) cutting use of petroleum in cars and trucks in half; (2) reaching 50% of energy production from renewables; and (3) doubling the energy efficiency of buildings, all by 2030.
Executive Order B-32-15	Directed State departments to create the California Sustainable Freight Action Plan, "that establishes clear targets to improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system.
SB 1 (Beall, 2017)	Establishes a state gas tax of 12 cents, expected to yield $52 billion for transportation and related infrastructure over the next decade.
SB 166 (Skinner, 2017)	Prohibits cities and counties from approving projects that aim to reduce residential density.
AB 73 (Chiu, 2017) / SB 540 (Roth, 2017)	AB 73 provides incentives for local governments incentives to create housing on infill sites near public transportation; the new developments will be approved through a streamlined review process and are not subject to project-specific legal challenges under CEQA. SB 540 rewards developers who agree to construct buildings where 30% of units will be sold or rented to moderate-income households, 15% to lower income households, and 5% to very low-income households, representing a legal tool for fostering more dense development in transit corridors.

Executive Order B-48-18	Governor Jerry Brown set a target of 5 million zero-emission vehicles on the road by 2030.
Volkswagen Settlement Funds	The settlement requires Volkswagen to spend $800 million in California to support zero-emission vehicles with charging infrastructure and other promotional efforts.

Regional Policy Initiatives

L.A. County Measure M	Voters authorized a L.A. County Traffic Improvement Plan through a ½-cent sales tax and continued the existing ½-cent traffic relief tax for traffic relief projects.

Local Policy Initiatives

Los Angeles Measure JJJ	Provides incentives for affordable housing in Transit-Oriented Communities, which guidelines identify as those located within ½ mile of major transit stops. Developments closer to transit stops receive increased incentives.
Santa Monica Electric Vehicle Action Plan	Triple the number of EV Charging stations from 89 in 2017 to 300 by 2020.
Los Angeles Cleantech Incubator	Roadmap and pilot projects that will identify a path to transportation electrification by 2028.